601 Pennsylvania Ave., NW
Suite 800
Washington, DC 20004
202-654-5900

April 23, 2018

VIA ELECTRONIC FILING

Ms. Marlene H. Dortch, Secretary
Federal Communications Commission
445 12th Street, S.W.
Washington, D.C. 20554

Re: ***Ex Parte Notification***

GN Docket No. 17-258, *Promoting Investment in the 3550-3700 MHz Band;*

AU Docket No. 18-85, *Auctions of Upper Microwave Flexible Use Licenses for Next-Generation Wireless Services;*

GN Docket No. 14-177, *Use of Spectrum Bands Above 24 GHz for Mobile Radio Services;*

GN Docket No. 17-183, *Expanding Flexible Use in Mid-Band Spectrum Between 3.7 and 24 GHz; and*

GN Docket No. 18-122, *Expanding Flexible Use of the 3.7 GHz to 4.2 GHz Band.*

Dear Ms. Dortch:

On April 19, 2018, Karri Kuoppamaki, VP Network Technology and Strategy, T-Mobile USA, Inc. ("T-Mobile"),[1/] Russell Fox of Mintz Levin, and I met with Erin McGrath, legal advisor to Commissioner O'Rielly. On April 20, 2018, we, along with John Hunter of T-Mobile, met separately with Will Adams, legal advisor to Commissioner Carr, and then with the following members of the Commission's staff regarding the above-referenced proceedings:

Julius Knapp	Navid Golshahi
Donald Stockdale	Christiann Segura
Dana Shaffer	Jessie Friend
Margaret Wiener	Eliot Maenner

1/ T-Mobile USA, Inc. is a wholly owned subsidiary of T-Mobile US, Inc., a publicly traded company.

Matthew Pearl	Peter Trachtenberg
Paul Powell	Joyce Jones
Martha Stancill	Jessica Greffenius

3.5 GHz

In order to maximize the potential for wireless services, it is imperative that the Commission adopt rules that provide the certainty and structure necessary to drive investment in the use of the 3550-3700 MHz ("3.5 GHz") band, both to develop technology and to deploy infrastructure. T-Mobile supports changes that preserve the three-tier sharing structure while making adjustments to the use of the 3.5 GHz band spectrum that will be available on a licensed basis. The Commission should move quickly to adopt these changes and to initiate the process of auctioning the 3.5 GHz band.

Geographic Area Size. We urged the Commission to adopt rules that would result in the issuance of Priority Access Licenses ("PALs") covering areas larger than census tracts. As T-Mobile demonstrated in its reply comments in this proceeding, the use of census tracts will materially impair licensees' ability to use their authorized spectrum – and the ability of spectrum access system ("SAS") administrators to manage the spectrum for *both* licensed and General Authorized Access ("GAA") users – because of the number of geographic area borders created.[2/] This problem is exacerbated in urban areas, where the number of census tracts – often *thousands* per partial economic area ("PEA") – will make spectrum management impossible. This problem is even further exacerbated because Time Division Duplex ("TDD") technologies will be used in the 3.5 GHz band, meaning that different licensees may not use the same spectrum for uplink and downlink operations. Efforts to ensure compatible operations between adjacent geographic area and frequency licensees to overcome that problem will be complicated by increasing the number of licensees in an area if census tract licensing is adopted.

T-Mobile recognizes that there are some entities that may wish to use 3.5 GHz band spectrum in more limited areas.[3/] GAA spectrum can be used to meet those needs. For others, that require the certainty that licensed spectrum provides, market transactions with licensees will enable consistent availability of capacity. Commenters suggested allowing SAS administrators, rather than the Commission, to facilitate secondary market spectrum leasing arrangements.[4/] Commenters also supported an approach under which PAL licensees may divide their service

---

[2/] Reply Comments of T-Mobile USA, Inc., GN Docket No. 17-258, at 26-27 (filed Jan. 29, 2018). T-Mobile's analysis has been confirmed in a recent *ex parte* letter covering a meeting between Commission staff, AT&T and CommScope. Letter from Stacey Black, AT&T, to Marlene H. Dortch, Secretary, FCC, GN Docket No. 17-258 (filed Apr. 5, 2018).

[3/] *See, e.g.*, Comments of General Electric Company, GN Docket No. 17-258, at 3-4 (filed Dec. 28, 2017); Comments of Motorola Solutions, Inc., GN Docket No. 17-258, at 2-4 (filed Dec. 28, 2017); Comments of the American Petroleum Institute and Energy Telecommunications and Electrical Association, GN Docket No. 17-258, at 3 (filed Dec. 21, 2017).

[4/] *See* Comments of NCTA – The Internet & Television Association, GN Docket No. 17-258, at 11 (filed Dec. 28, 2017); Comments of Verizon, GN Docket No. 17-258, at 15 (filed Dec. 28, 2017) ("Verizon Comments").

areas into used and unused areas and allow lessees, on their own, coordinate use of the unused areas.[5/] Both suggestions offer better alternatives than potentially making the entire 3.5 GHz band unusable through the use of too-small license areas to accommodate a single business plan.

T-Mobile notes that after its meetings, several parties submitted a letter in the 3.5 GHz proceeding proposing that the Commission issue PALs based on Metropolitan Statistical Areas ("MSAs") in the top 306 Cellular Market Areas ("CMAs") and based on counties in the remainder of the country.[6/] T-Mobile supports this approach, which will allow the Commission to avoid the engineering challenges of using 3.5 GHz spectrum in too-small geographic areas in urban locations while potentially fostering the use of the spectrum by smaller providers in rural areas.

Static Licensing. We also urged that the Commission permit PAL holders to bid on, and acquire, specific frequency assignments. Even when the Commission conducts a clock auction for otherwise fungible licenses, it also holds an assignment-round auction so that licensees can operate networks in a stable spectrum environment.[7/] Static licenses are even more important where, as will be the case for the 3.5 GHz band, spectrum will be used with TDD technology. Because there will be no common uplink/downlink spectrum scheme, the most efficient use of spectrum will occur when licensees are able to coordinate with each other regarding spectrum use. But that coordination will be frustrated if spectrum is assigned dynamically. T-Mobile recognizes that PAL use will be preempted when spectrum is required for government operations. That is why T-Mobile proposed that the Commission auction the first 70 megahertz of PAL spectrum, reserving the remaining 30 megahertz for "swing space," when PAL use is preempted.[8/] And, PAL holders should be able to elect stability over capacity by notifying the Spectrum Access System ("SAS") administrators that they prefer not be moved at all during a time when access to their static assignment is preempted in order to retain an otherwise constant spectrum environment.

Spectrum Frontiers

We applauded the Commission's recent announcement that it would begin to auction spectrum in the millimeter wave bands. Nevertheless, we urged the Commission to separate clearly the 28 GHz band and 24 GHz band auctions and to include additional bands, along with 24 GHz, in the second auction. Much of the 28 GHz band, that the Commission proposes to auction first, is already licensed and presents limited opportunity for additional licensing.[9/] While the 24 GHz

---

5/ Verizon Comments at 16.

6/ Letter from Rebecca Murphy Thompson, Executive Vice President and General Counsel, Competitive Carriers Association, and Scott K. Bergmann, Senior Vice President, Regulatory Affairs, CTIA, to Marlene H. Dortch, Secretary, FCC, GN Docket No. 17-258, at 1 (filed Apr. 20, 2018).

7/ *See, e.g., Auctions of Upper Microwave Flexible Use Licenses for Next-Generation Wireless Services*, Public Notice, AU Docket No. 18-85, FCC 18-43, ¶ 83 (2018) ("Auction Public Notice").

8/ *See* Comments of T-Mobile USA, Inc., GN Docket 17-258, at 11-12 (filed Dec. 28, 2017).

9/ *See Application of Cellco Partnership d/b/a Verizon Wireless and XO Holdings For Consent to Transfer Control of Local Multipoint Distribution Service and 39 GHz Licenses*, Memorandum Opinion and Order, 32 FCC Rcd 10125 (2017); *Application of Verizon Communications Inc. and Straight Path*

band represents a greenfield opportunity, it has not been the focus of standards and technology development efforts. Instead, millimeter wave standards and technology development have focused primarily in the 28 GHz, 37 GHz – another greenfield opportunity – and 39 GHz bands, based on the Commission's current licensing of those bands (or, in the case of 37 GHz, the band being immediately adjacent to currently licensed spectrum). Accordingly, the Commission would more meaningfully advance 5G opportunities by including the 37 GHz, 39 GHz, and 47 GHz bands in an auction, along with the 24 GHz band.

Auctioning just the 24 GHz band is also contrary to sound economic theory and auction design. When licenses are possible substitutes or complements for other licenses – which the Commission has determined they are in this case[10/] – auctioning them together will increase efficiency. For instance, an auction that includes the 24 GHz, 37 GHz, 39 GHz and 47 GHz bands would provide potential bidders with sufficient information (*e.g.*, a better understanding of price levels and license differences across bands), to allow tradeoffs between the spectrum bands. Separating this auction from the 28 GHz auction will provide an opportunity for participants to plan based on the outcome of the 28 GHz auction and provide the Commission an opportunity to resolve any outstanding regulatory issues.

Mid-Band Spectrum[11/]

Finally, we applauded the Commission's recent decision to freeze applications for satellite stations in the 3.7-4.2 GHz band in support of the potential reallocation of that spectrum for mobile wireless terrestrial use.[12/] The 3.5 GHz spectrum that the Commission has already designated for terrestrial wireless use is a good step toward making mid-band spectrum available for 5G operations. But even if the Commission takes the actions that T-Mobile and others recommend, the use of the band will be limited. That is why the Commission must go further and make additional mid-band spectrum available for terrestrial mobile use under typical

---

Communications, Inc. For Consent to Transfer Control of Local Multipoint Distribution Service, 39 GHz, Common Carrier Point-to-Point Microwave, and 3650-3700 MHz Service Licenses, Memorandum Opinion and Order, DA 18-52 (2018).

10/ *See Auction Public Notice* ¶ 14. *See also Use of Spectrum Bands Above 24 GHz for Mobile Radio Services*, et al., Second Report and Order, Second Further Notice of Proposed Rulemaking, Order on Reconsideration, and Memorandum Opinion and Order, 32 FCC Rcd. 10988, ¶ 71 (2017) ("*Second Further Notice*"); *Use of Spectrum Bands Above 24 GHz for Mobile Radio Services*, et al., Report and Order and Further Notice of Proposed Rulemaking, 31 FCC Rcd. 8014, ¶¶ 185-186 (2016) (*Further Notice*).

11/ We only discussed this proceeding with the staff of the Office of Engineering and Technology and Wireless Telecommunications Bureau with whom we met on April 20, 2018.

12/ *Temporary Freeze on Applications for New or Modified Fixed Satellite Service Stations and Fixed Microwave Stations in the 3.7-4.2 GHz Band, 90-Day Window to File Applications for Earth Stations Currently Operating in 3.7-4.2 GHz Band,* Public Notice, GN Docket Nos. 17-183, 18-122, DA 18-398 (2018); *Expanding Flexible Use of the 3.7 GHz to 4.2 GHz Band, Wireless Telecommunications Bureau, International Bureau, and Office of Engineering and Technology Establish GN Docket No 18-122*, Public Notice, GN Docket No. 18-122, DA 18-396 (2018).

licensed spectrum parameters. Doing so will ensure that the U.S. remains in step with other countries in designating mid-band spectrum for terrestrial wireless use.

Pursuant to Section 1.1206(b)(2) of the Commission's rules, an electronic copy of this letter is being filed in the above-referenced dockets and a copy is being provided to each member of the Commission's staff with whom we met. Please direct any questions regarding this filing to me.

Respectfully submitted,

/s/ Steve B. Sharkey
Steve B. Sharkey
Vice President, Government Affairs
Technology and Engineering Policy

Attachment

cc: (each with attachment)

Erin McGrath	Martha Stancill
Will Adams	Navid Golshahi
Julius Knapp	Christiann Segura
Donald Stockdale	Jessie Friend
Dana Shaffer	Eliot Maenner
Margaret Wiener	Peter Trachtenberg
Matthew Pearl	Joyce Jones
Paul Powell	Jessica Greffenius